

## SERVICE MANUAL

# FISHER

# RS-110L

LW/MW/FM  
Stereo Receiver  
(EUROPE)



*The first name in high fidelity*



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# SPECIFICATIONS

## FM SECTION

Tuning Range	87.5 – 108 MHz
DIN Sensitivity (75 ohms)	
Mono	1.5 $\mu$ V
Stereo	3.5 $\mu$ V
IHF Sensitivity (300 ohms)	
Mono	3.0 $\mu$ V
Stereo	7.0 $\mu$ V
Stereo Trigger Sensitivity	8.0 $\mu$ V
Muting Threshold	8.0 $\mu$ V
S/N Ratio (DIN)	
Mono	65 dB
Stereo	60 dB
Selectivity (DIN)	70 dB
Capture Ratio	1.0 dB
AM Suppression	60 dB
Spurious Rejection	75 dB
IF Rejection	80 dB
Image Rejection	50 dB
Sub-Carrier Suppression (19/38 kHz)	65/75 dB
THD (1 kHz)	
Mono	0.2 %
Stereo	0.5 %
Frequency Response (20 Hz – 15 kHz)	-2.0 dB
Stereo Separation (1 kHz)	40 dB

## MW SECTION

Tuning Range	520 – 1610 kHz
Sensitivity	300 $\mu$ V/m
S/N Ratio	55 dB
Image Rejection	40 dB
Selectivity ( $\pm$ 10 kHz)	40 dB
THD (30 % Mod.)	0.5 %
Spurious Rejection	60 dB
IF Rejection	40 dB

## LW SECTION

Tuning Range	145 – 355 kHz
Sensitivity	700 $\mu$ V/m
S/N Ratio	55 dB
Image Rejection	40 dB
Selectivity ( $\pm$ 10 kHz)	40 dB
THD (30 % Mod.)	0.5 %
Spurious Rejection	60 dB
IF Rejection	40 dB

## AMPLIFIER SECTION

Sine Wave Power	2 x 23 W
at 1000 Hz (8 ohms)	2 x 20 W
40 to 20,000 (8 ohms)	2 x 26 W
Music Power (8 ohms)	
THD (Rated Output, 8 ohms)	0.1 %
IM (Rated Output, 8 ohms)	0.1 %
Damping Factor (8 ohms)	>20
Frequency Response (20 Hz – 20 kHz)	$\pm$ 0.5 dB
Input Sensitivity and Impedance	

Phono	2.5 mV/50 kohms
Tape	150 mV/50 kohms
Tuner	150 mV/50 kohms
S/N Ratio (DIN)	

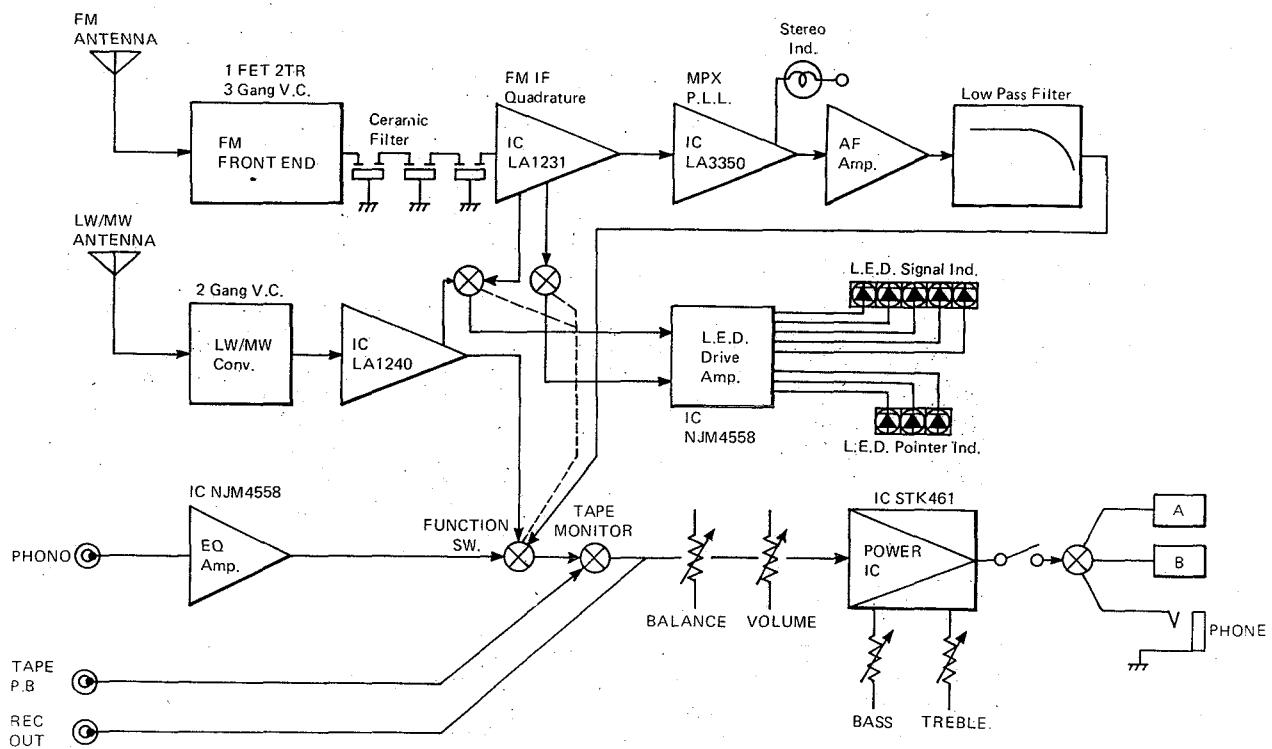
Phono	60 dB
Tape/Tuner	90 dB
Treble Control (10 kHz)	$\pm$ 10 dB
Bass Control (100 Hz)	$\pm$ 10 dB
Loudness Control (100 Hz/10 kHz)	+8 dB/+4 dB

## GENERAL

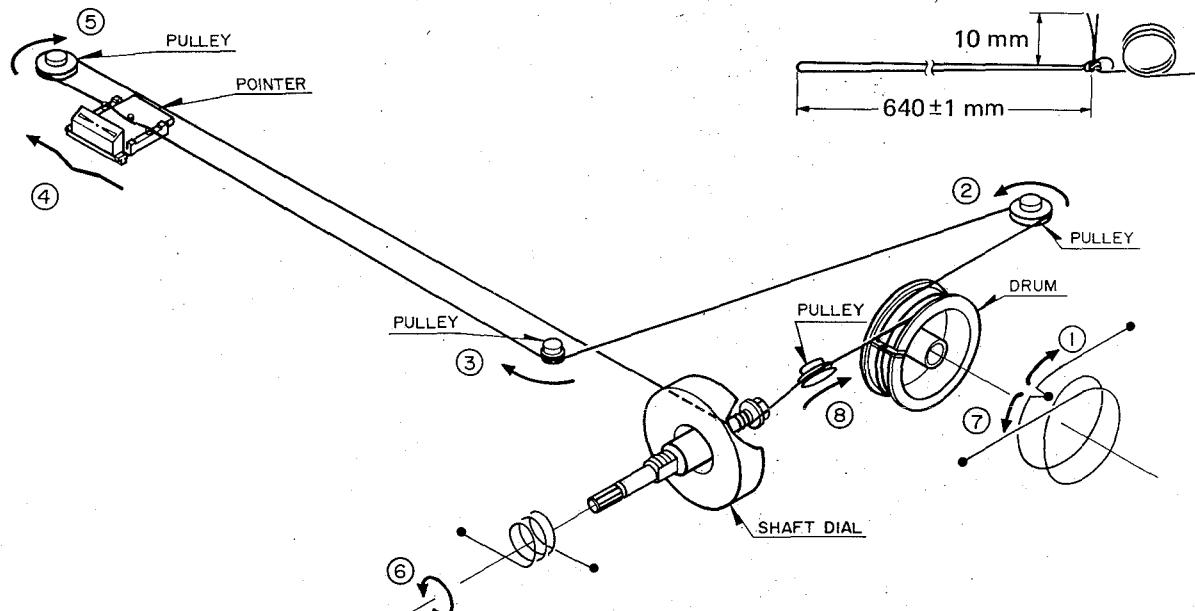
Power Requirements	AC 110/220 V, 50 Hz
Power Consumption	120 W
Dimensions (W x D x H)	400 x 300 x 125 mm
Weight (approx.)	6.9 kg

\* Specifications are subject to change without notice.

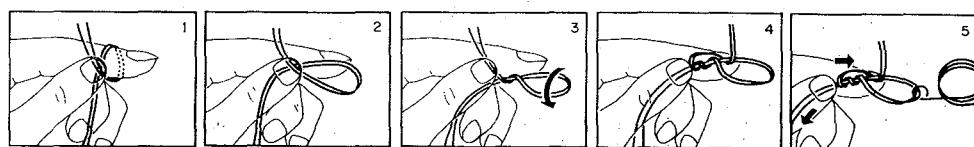
# FUNCTIONAL BLOCK DIAGRAM



## DIAL CORD STRINGING



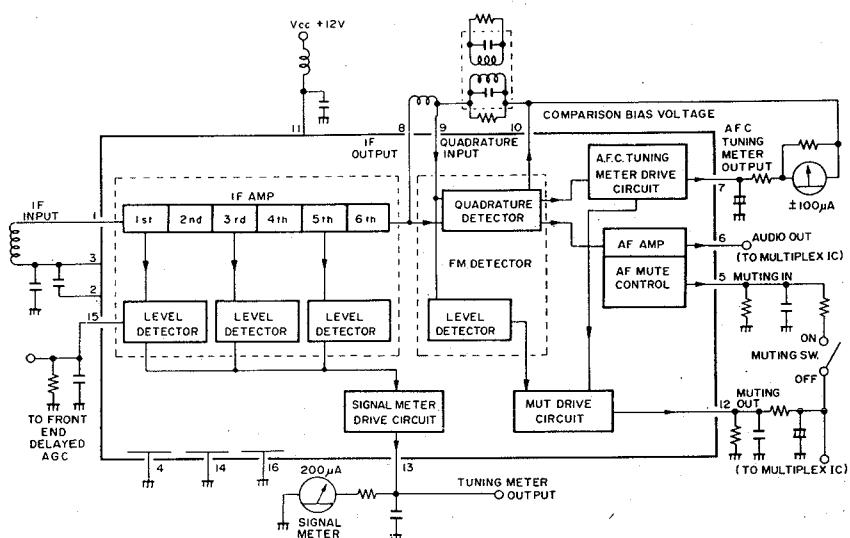
## CORD KNOTTING



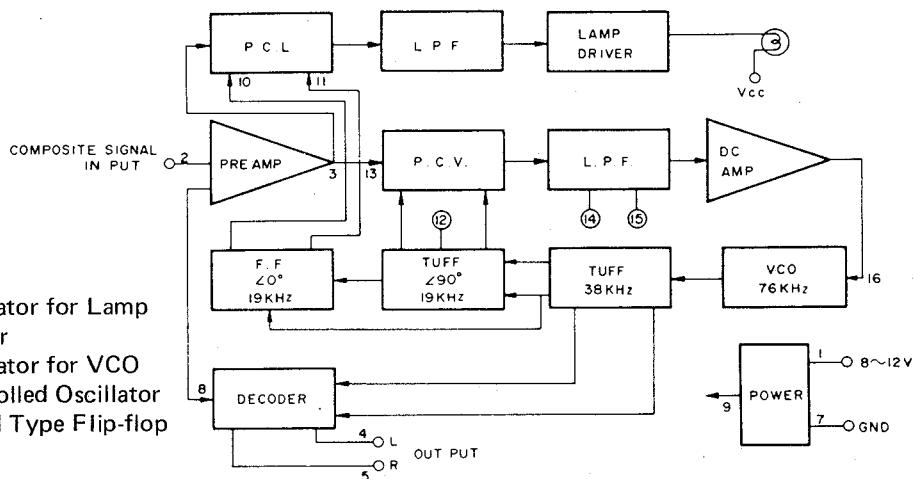
NOTE: Check to see that the dial cord is correctly strung by turning the dial.

## IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM

FM IF IC LA1231



## FM MPX IC LA3350



### P. C. L. : Phase Comparator for Lamp

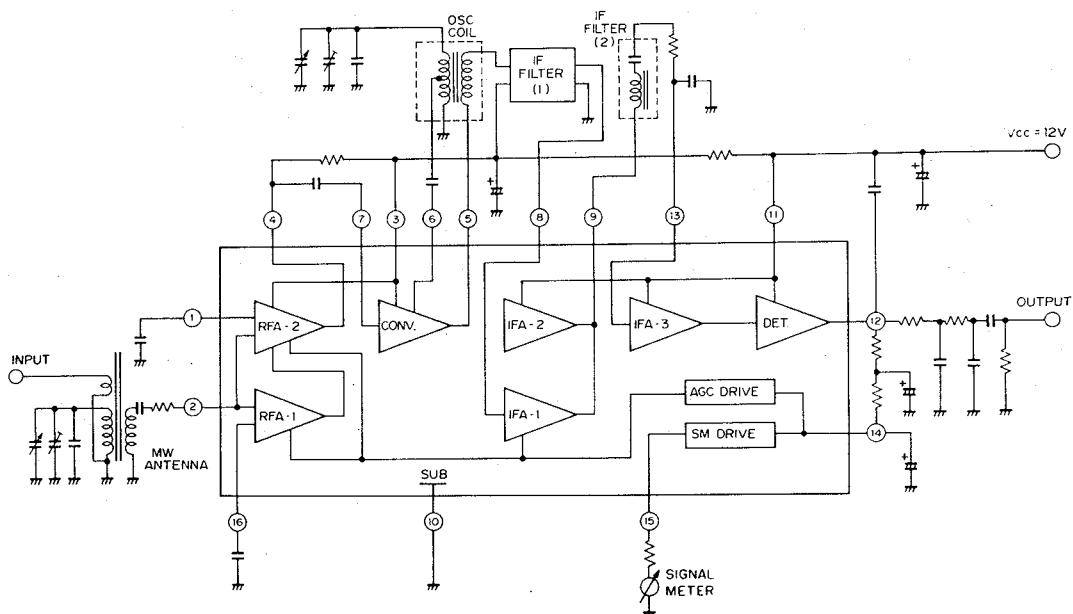
L. P. F. : Low Pass Filter

## P. C. V. : Phase Comparator for VCO

**VCO** : Voltage Controlled Oscillator

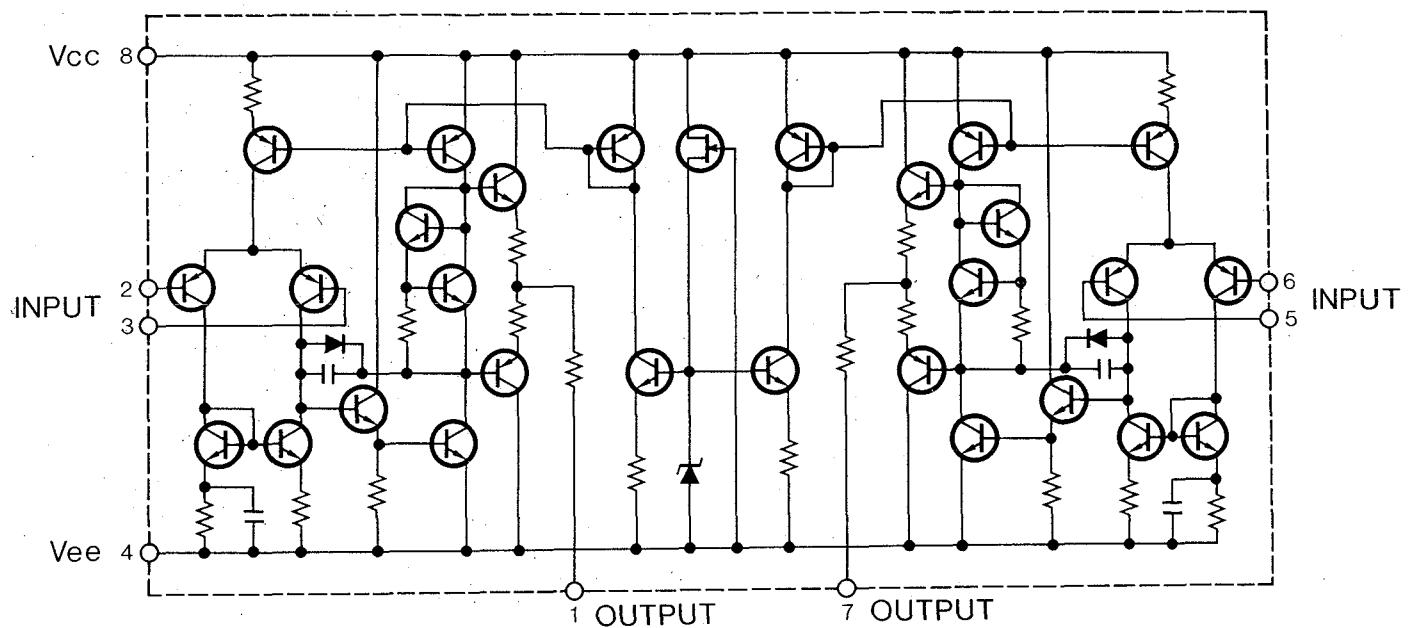
**TUFF** : Direct coupled Type Flip-flop

AM RF IF IC LA1240

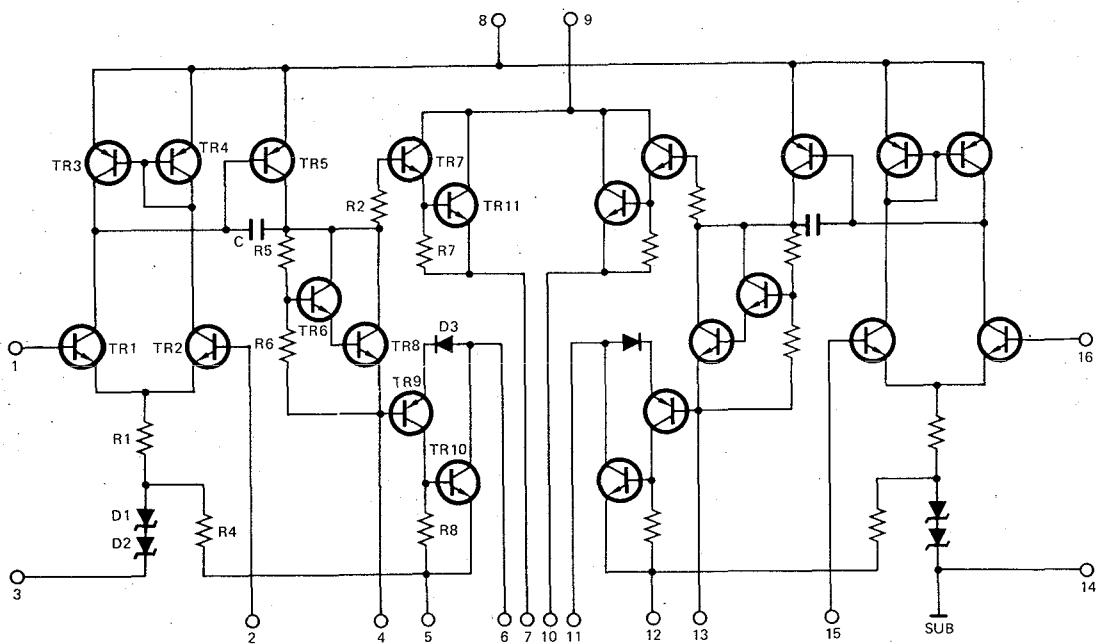


# IC EQUIVALENT CIRCUIT & BLOCK DIAGRAM (Continued)

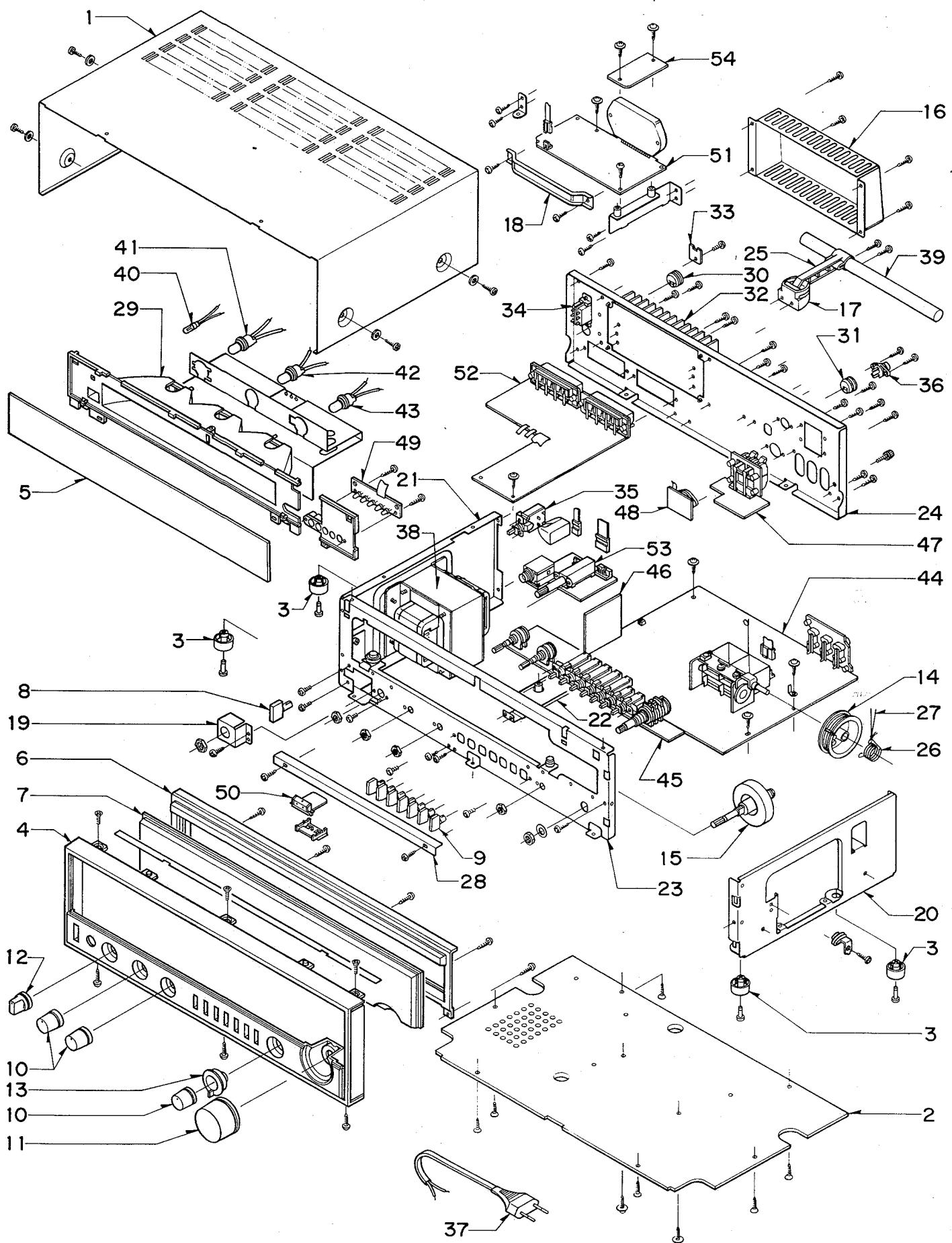
AF AMP IC NJM4558



POWER AMP IC STK-461



## **EXPLODED VIEW OF CABINET AND CHASSIS**



# PARTS LIST

## PACKING PARTS LIST

Ref. No.	Parts Number	Description
	131 6 1139 88100	Box Corrugate-EXP
	131 6 2119 02091	Bag Polyethylene-EXP
	131 6 3009 31521	Pad (Right)
	131 6 3009 31522	Pad (Left)

## CHASSIS PARTS LIST

Ref. No.	Parts Number	Description
30	131 2 6111 14200	Bushing (AC Cord)
31	131 2 6111 14801	Bushing (Ant. Lead)
32	131 2 6201 29200	Plate Heat Sink
33	131 2 7104 00500	Plate Pad Switch

## ACCESSORIES PARTS LIST

Ref. No.	Parts Number	Description
	4 2442 00030	Antenna FM
	131 6 2719 10801	Bag Fan
	131 6 4119 86300	Explanatory Booklet
	131 6 4519 15700	Guarantee Certificate

## ELECTRICAL PARTS LIST

Ref. No.	Parts Number	Description
34	4 2312 01020	Switch Slide
35	4 2312 04520	Switch Push Power
36	4 2352 00110	Socket 1P
37	4 2432 00140	Power Cord
38	4 2512 14920	Power Transformer
39	4 2579 25110	Bar Antenna AM
40	4 6122 00440	Pilot Lamp (6 V, 30 mA)
41	4 6129 20771	Pilot Lamp (8 V, 300 mA)
42	4 6129 20776	Pilot Lamp (8 V, 300 mA)
43	4 6129 20777	Pilot Lamp (8 V, 300 mA)
44	*	131 0 4001 06082 RF IF MPX P.C.B. Assy
45	*	131 0 4001 06590 Volume P.C.B. Assy
46	*	131 0 4001 06580 Muting P.C.B. Assy
47	*	131 0 4001 06120 Antenna P.C.B. Assy
48	*	131 0 4001 06130 DIN P.C.B. Assy
49	*	131 0 4001 06600 L.E.D. Signal P.C.B. Assy
50	*	131 0 4001 05501 L.E.D. Pointer P.C.B. Assy
51	*	131 0 4001 06160 Power Amp P.C.B. Assy
52	*	131 0 4001 06171 Power Supply P.C.B. Assy
53	*	131 0 4001 06570 Speaker Selector P.C.B. Assy
54	*	131 0 4001 06190 Fuse P.C.B. Assy
C01	4 2232 00550	Oil 0.01 $\mu$ F 450V

\*—Not a service part.

## APPEARANCE PARTS LIST

Ref. No.	Parts Number	Description
4	131 0 1016 37800	Panel Decorate Assy
5	131 2 1201 35901	Plate Dial
6	131 2 1116 19103	Frame
7	131 2 1205 24900	Decorate Plate Dial
8	131 2 1601 64500	Knob (Power SW.)
9	131 2 1601 64600	Knob (Push SW.)
10	131 2 1601 64700	Knob (Volume)
11	131 2 1601 66400	Knob (Tuning)
12	131 2 1601 67500	Knob (Speaker SW.)
13	131 2 1601 67600	Knob (Balance)

## CHASSIS PARTS LIST

Ref. No.	Parts Number	Description
14	131 0 3002 11300	Drum Assy
15	131 0 3003 22400	Shaft Dial Assy
16	131 2 1410 25400	Cover
17	131 2 2207 10500	Support Arm (Antenna)
18	*	131 2 3101 71300 Metal Mount (IC)
19	*	131 2 3101 72000 Metal Mount (Phone)
20	*	131 2 3101 74400 Metal Mount (Right Side Panel)
21	*	131 2 3101 74500 Metal Mount (Left Side Panel)
22	*	131 2 3101 74600 Metal Mount
23	*	131 2 3305 30600 Panel Front
24	*	131 2 3306 32702 Panel Rear
25	131 2 3602 12101	Holder Antenna
26	131 2 4111 00400	Spring Rope
27	131 2 4112 10400	Rope 0.5
28	131 2 4120 13100	Slide Rail Pointer
29	131 2 6110 29301	Shelter Light

# AM-FM MULTIPLEX ALIGNMENT

## AM ALIGNMENT

For alignment: Maintain generator output as low as possible for suitable indication.

Step	Adjusting circuit	Connection		Position of Tuning dial	Adjustment	V.T.V.M. Oscilloscope
		Input	Output			
1	IF	Connect 455 kHz sweep generator to VC4.	Connect Oscilloscope to Test Point TP7.	Near max. capacity of VC at position of no interference	AM IFT 2-00040	
2	MW (RF)	Connect AM generator to EXT AM antenna and GND terminals. Set to 600 kHz. Modulate with 30 %, 400 Hz.	Connect Oscilloscope and AC. V.T.V.M. to REC Output.	600 kHz	AM BAR ANT 9-25110 MW OSC 9-20851	Max.
3		Change frequency to 1400 kHz.		1400 kHz	TC 01,03	
4	LW (RF)	Change frequency to 160 kHz.		160 kHz	LW OSC 9-20860	Max.
5		Change frequency to 350 kHz.		350 kHz	TC 02, 04	
6	Repeat adjustments.					

1. Variable capacitor completely closed
2. Set the dial pointer to very left line dial scale.
3. Connect sweep generator, SG, V.T.V.M. and oscilloscope.
4. Function switch to "MW" or "LW"
5. Use a screwdriver with plastic grip for all adjustments.

## FM ALIGNMENT

Step	Adjusting circuit	Connection		Position of Tuning dial	Adjustment	V.T.V.M. Oscilloscope
		Input	Output			
1	IF	Connect sweep 10.7 MHz generator to test point VC2.	Connect Oscilloscope to Test Point TP4.	Near max. capacity of VC at position of no interference	FM IFT 9-21360	
2	Quadrature Detector		Connect Oscilloscope to Test Point TP2.		FM QUADRATURE COIL 9-21350	
3	RF	Connect FM RF generator through two 120-ohm resistors to FM antenna screw terminals. Set generator to 90 MHz, modulate with 400 Hz to provide $\pm 75$ kHz deviation. Set generator output attenuator as low as possible.	Connect V.T.V.M. to REC Output.	90 MHz	FM ANT COIL 9-21180 FM RF COIL 9-20460 FM OSC COIL 9-20910	Max.
4		Change generator setting to 106 MHz.			106 MHz	TCA, TCR, TCO
5	Repeat adjustments.					

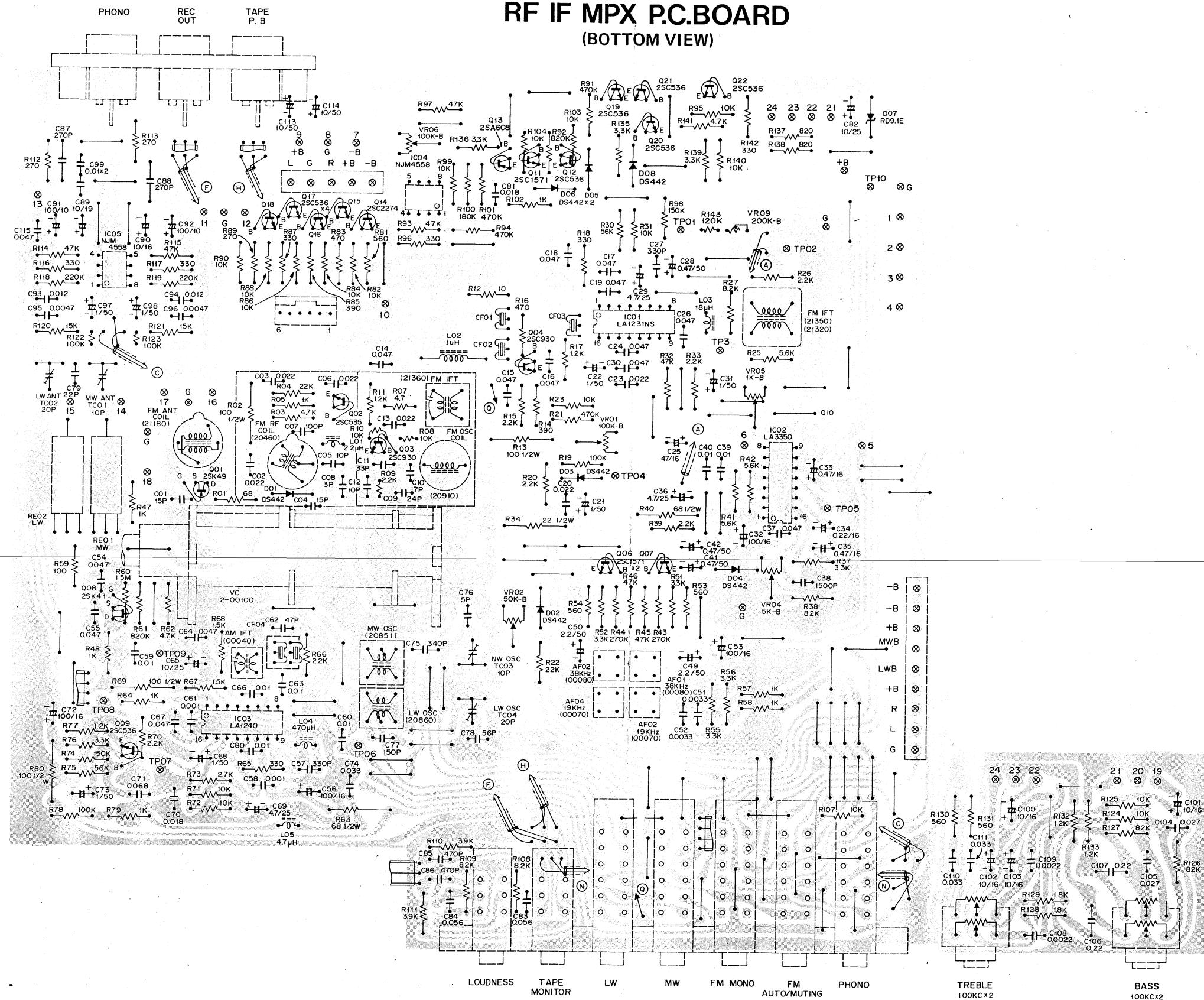
1. Variable capacitor completely closed
2. Set the dial pointer to very left line dial scale.
3. Connect sweep generator, FM SG, V.T.V.M. and oscilloscope. FM ANT input impedance is 75 ohm.
4. Function switch to "FM"
5. Use a screwdriver with plastic grip for all adjustments.

## FM MPX ALIGNMENT

Step	Adjusting circuit	Connection		Position of Tuning dial	Adjustment	
		Input	Output			
1	PLL IC FO (19 kHz) Adjustmet	None	Connect Frequency counter or synchroscope to TP5	Near max. capacity of VC at position of no interference	Adjust VR04 (5k-B) so that frequency counter or synchroscope indicates 19 kHz.	
2	FM STEREO Signal Separation	As above Steps 3,4 except modulation. Modulate LEFT channel $\pm 67.5$ kHz – 400 Hz audio and $\pm 7.5$ kHz – 19 kHz pilot carrier. As above except modulate RIGHT Channel.	Connect V.T.V.M. to REC output terminal (R Channel).		VR05 (1k-B)	V.T.V.M. Min.
3			Connect V.T.V.M. to REC output terminal (L Channel).			
Repeat steps 1,2. Set at position with max. channel separation.		<ol style="list-style-type: none"> <li>1. Variable capacitor completely closed</li> <li>2. Connect FM stereo SG and V.T.V.M.</li> <li>3. Function switch to "FM"</li> <li>4. Use a screwdriver with plastic grip for all adjustments.</li> </ol>				



# RF IF MPX PC.BORD (BOTTOM VIEW)



### 1. VR01 Muting Level Adjustment

Adjust VR01 at the aerial input of FM 75 ohm and the sensitivity of  $8\mu\text{V}$  (Muting Switch: ON) until the wave form amplitude of the REC output becomes half.

### 2. VR02 Signal Indicator Adjustment

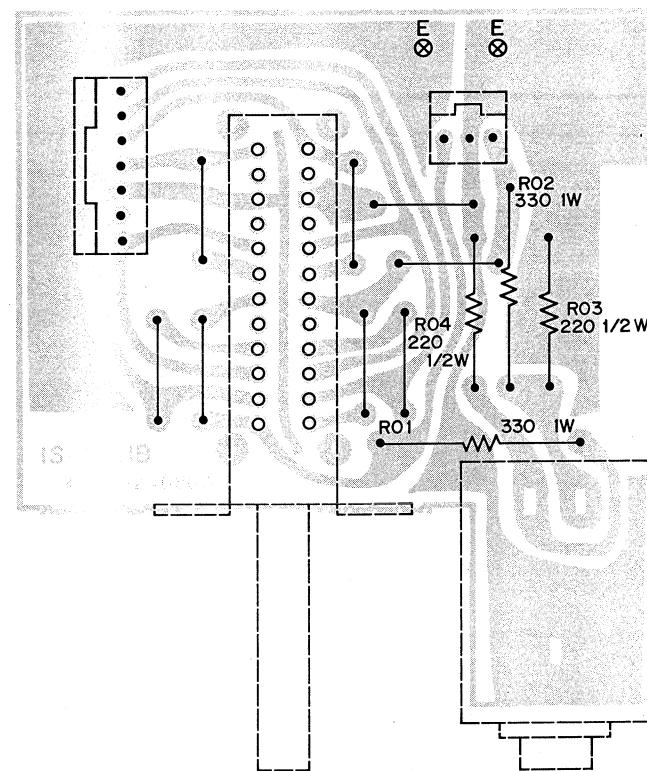
Adjust the attenuator of FM SSG to 60 dB and VR02 until the final L.E.D. of the Signal Indicator slightly lights up.

### 3. VR06 Pointer L.E.D. Adjustment

Connect the DC Voltmeter to Test Point No. 10 and adjust VR06 until the voltage becomes  $0\pm 50\text{ mV}$ .

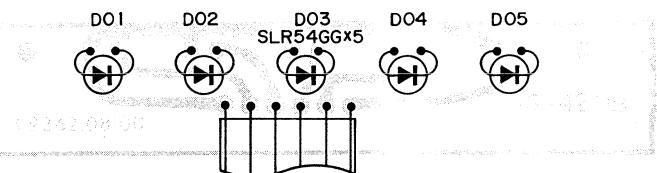
IC PIN NUMBERS VOLTAGES																	
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC01	LA1231	2.8V	2.8V	2.8V	0V	2.3V	5.7V	5.6V	5.7V	5.7V	5.7V	13.1V	4.3V	0.3V	0V	5.0V	0V
IC02	LA3350	12.5V	0V	5.6V	7.7V	7.7V	15.9V	0V	0.4V	—	2.1V	2.1V	2.2V	2.1V	2.1V	2.1V	2.9V
IC03	LA1240	4.6V	1.6V	12.0V	9.7V	12.0V	3.3V	1.3V	2.7V	8.9V	0V	12.2V	1.5V	0.6V	1.4V	0V	1.1V
IC05	NJM4558	0V	0V	0V	-15V	0V	0V	0V	15V	—	—	—	—	—	—	—	—

**SPEAKER SELECTOR P.C.BOARD**  
(BOTTOM VIEW)

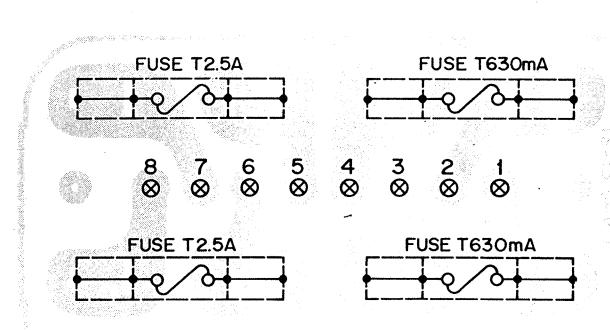


HEADPHONE

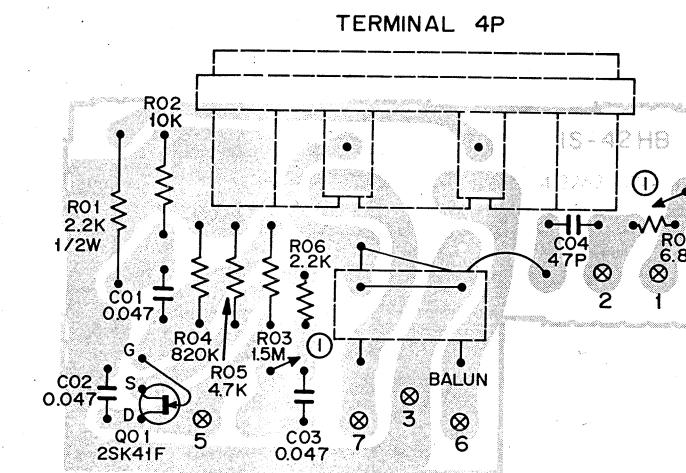
**L.E.D SIGNAL P.C.BOARD**  
(BOTTOM VIEW)



**FUSE P.C.BOARD**  
(BOTTOM VIEW)

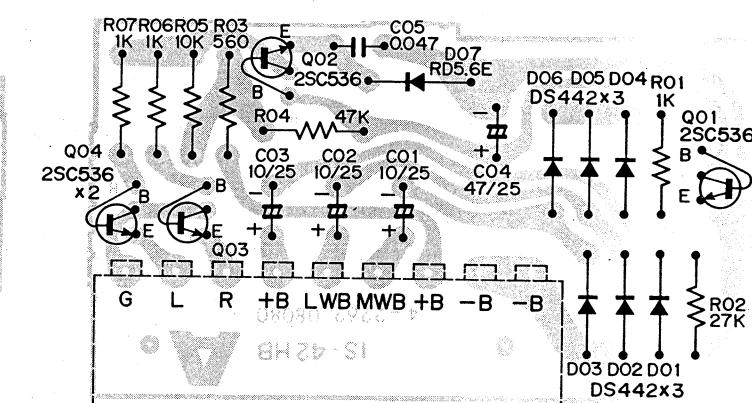


**ANTENNA P.C.BOARD**  
(BOTTOM VIEW)

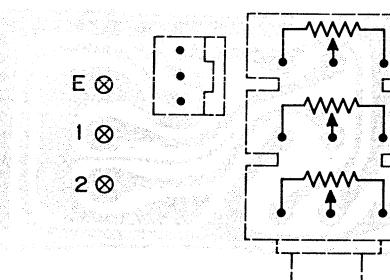


TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	G	D	S
Q01	2SK41	3.8V	11.4V	4.9V

**MUTING P.C.BOARD**  
(BOTTOM VIEW)

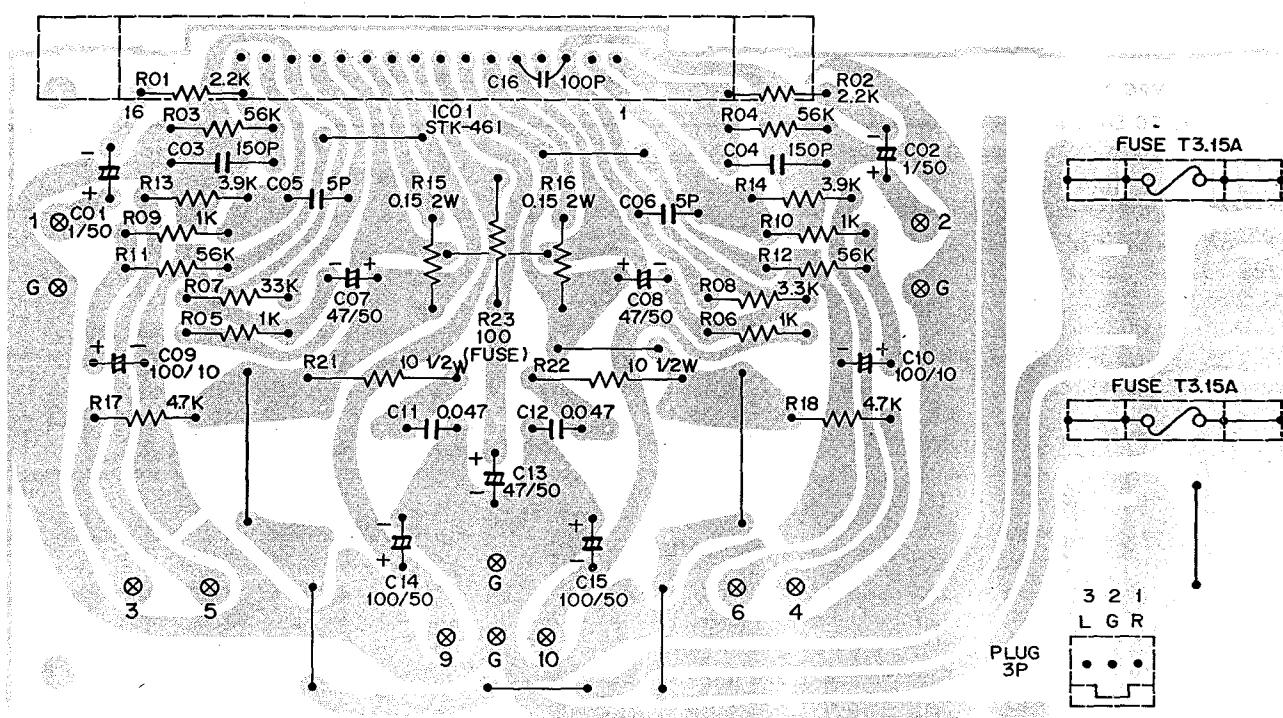


**VOLUME P.C.BOARD**  
(BOTTOM VIEW)



# POWER AMP P.C.BOARD

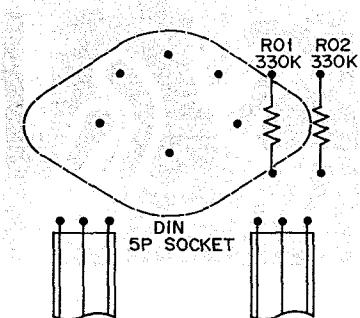
(BOTTOM VIEW)



IC PIN NUMBERS VOLTAGES																	
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC01	STK461	0V	0V	0V	1.3V	-32.3V	0V	0V	30.3V	32.0V	0V	0V	-32.3V	-1.3V	0V	0V	

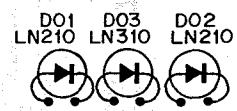
# DIN P.C.BOARD

(BOTTOM VIEW)



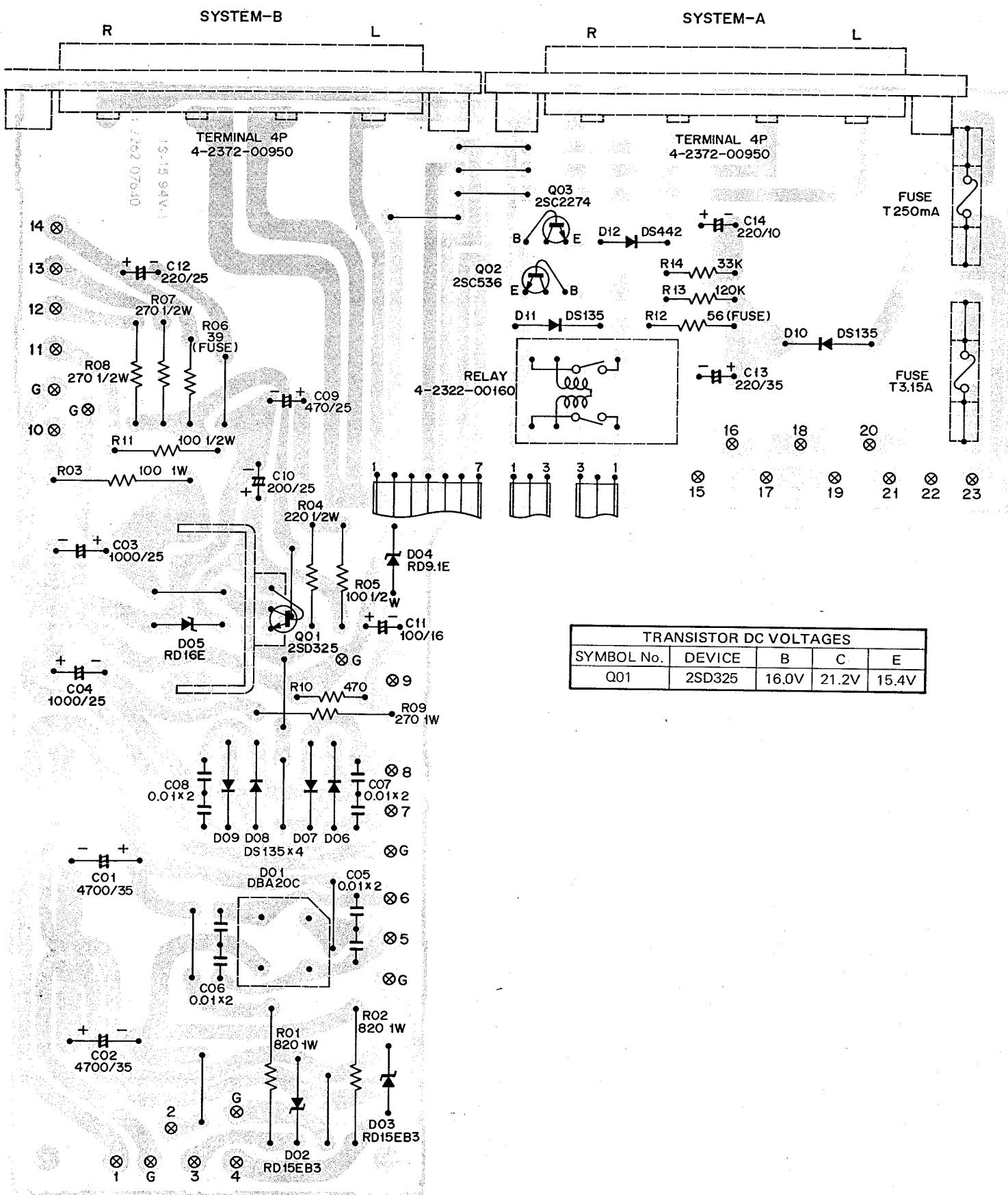
# L.E.D. POINTER P.C.BOARD

(BOTTOM VIEW)





# POWER SUPPLY P.C.BOARD (BOTTOM VIEW)



TRANSISTOR DC VOLTAGES				
SYMBOL No.	DEVICE	B	C	E
Q01	2SD325	16.0V	21.2V	15.4V

# PARTS LIST

RF IF MPX P.C.B. Assy  
1310 4001 06082

Ref. No.	Parts Number	Description	Ref. No.	Parts Number	Description	
	4 2242 00100	Variable Capacitor		C29	C1ERY-475APA	Electrolytic 4.7 $\mu$ F 25V
	4 2312 04870	Switch Push 7 key		C30	C1HYYZ473APA	Ceramic 0.047 $\mu$ F 50V +80, -20%
	4 2329 20210	Relay Leed		C31	C1HRY-105APA	Electrolytic 1 $\mu$ F 50V
	4 2359 23220	RCA 6P Jack		C32	C1CRY-107APA	Electrolytic 100 $\mu$ F 16V
	4 2362 00370	Plug 6P		C33	C1CUEX474A	Sint. Alu. 0.47 $\mu$ F 16V +40, -20%
	4 2362 00530	Plug 9P		C34	C1CUEX224A	Sint. Alu. 0.22 $\mu$ F 16V +40, -20%
	4 2522 00070	AF Filter		C35	C1CUEX474A	Sint. Alu. 0.47 $\mu$ F 16V +40, -20%
	4 2522 00080	AF Filter		C36	C1ERY-475APA	Electrolytic 4.7 $\mu$ F 25V
	4 2562 00040	IF Transformer AM		C37	C1HFYK473APA	Mylar 0.047 $\mu$ F 50V ±10%
	4 2569 21350	IF Transformer FM		C38	C1HSEJ152A	Styrol 1500 pF 50V ±5%
	4 2569 21360	IF Transformer FM		C39,40	C1HFYK103APA	Mylar 0.01 $\mu$ F 50V ±10%
	4 2579 21180	Antenna Coil FM		C41,42	C1HRY-474APA	Electrolytic 0.47 $\mu$ F 50V
	4 2589 20851	OSC Coil MW		C49,50	C1HRY-225LPA	Electrolytic 2.2 $\mu$ F 50V
	4 2589 20860	OSC Coil LW		C51,52	C1HFYK332APA	Mylar 0.0033 $\mu$ F 50V ±10%
	4 2582 20910	OSC Coil FM		C53	C1CRY-107APA	Electrolytic 100 $\mu$ F 16V
	4 2599 20460	RF Coil FM		C54,55	C1HYYZ473APA	Ceramic 0.047 $\mu$ F 50V +80, -20%
CF01,02	131 2 6103 16400	Cover Shield		C56	C1CRY-107APA	Electrolytic 100 $\mu$ F 16V
03	4 2272 00020	Ceramic Filter		C57	C1HCYK331APA	Ceramic 330 pF 50V ±10%
CF04	4 2272 00030	Ceramic Filter		C58	C1HYYZ102APA	Ceramic 0.001 $\mu$ F 50V +80, -20%
L01	4 2539 20420	Choke Coil 2.2 $\mu$ H		C59,60	C1HFYK103APA	Mylar 0.01 $\mu$ F 50V ±10%
L02	4 2539 20120	IF Trap		C61	C1HYYZ102APA	Ceramic 0.001 $\mu$ F 50V +80, -20%
L03	4 2532 00030	Choke Coil 18 $\mu$ H		C62	C1HCYK470APA	Ceramic 47 pF 50V ±10%
L04	4 2539 20410	Choke Coil 470 $\mu$ H		C63	C1HFYK103APA	Mylar 0.01 $\mu$ F 50V ±10%
L05	4 2552 00140	AF Coil		C64	C1HYYZ473APA	Ceramic 0.047 $\mu$ F 50V +80, -20%
TC01	4 2249 20310	Variable Capacitor (10P)		C65	C1ERY-106APA	Electrolytic 10 $\mu$ F 25V
TC02	4 2249 20440	Trimmer Capacitor (20P)		C66	C1HFYK103APA	Mylar 0.01 $\mu$ F 50V ±10%
TC03	4 2249 20310	Variable Capacitor (10P)		C67	C1HYYZ473APA	Ceramic 0.047 $\mu$ F 50V +80, -20%
TC04	4 2249 20440	Trimmer Capacitor (20P)		C68	C1HRY-105APA	Electrolytic 1 $\mu$ F 50V
VR01	4 2222 00960	VR 100k-B		C69	C1ERY-475APA	Electrolytic 4.7 $\mu$ F 25V
VR02	4 2222 01010	VR 50k-B		C70	C1HFYK183APA	Mylar 0.018 $\mu$ F 50V ±10%
VR04	4 2222 01000	VR 5k-B		C71	C1HFYK683APA	Mylar 0.068 $\mu$ F 50V ±10%
VR05	4 2222 00990	VR 1k-B		C72	C1CRY-107APA	Electrolytic 100 $\mu$ F 16V
VR06	4 2222 00960	VR 100k-B		C73	C1HRY-105APA	Electrolytic 1 $\mu$ F 50V
VR07,08	4 2222 01650	VR 100k-Cx2 (Bass, Treble)		C74	C1HFYK333APA	Mylar 0.033 $\mu$ F 50V ±10%
VR09	4 2222 00880	VR 200k-B		C75	C1HSEJ341A	Styrol 340 pF 50V ±5%
	<b>CAPACITORS</b>			C76	C1HCYK050APA	Ceramic 5 pF 50V ±0.25%
C01	C1HCYK150APA	Ceramic 15 pF 50V ±10%		C77	C1HSEJ151A	Styrol 150 pF 50V ±5%
C02,03	C1HYYZ223APA	Ceramic 0.022 $\mu$ F 50V +80, -20%		C78	C1HCYK560APA	Ceramic 56 pF 50V ±10%
C04	C1HCDJ150SL	Ceramic 15 pF 50V ±5%		C79	C1HCYK220APA	Ceramic 22 pF 50V ±10%
C05	C1HCYD100APA	Ceramic 10 pF 50V ±0.5%		C80	C1HFYK103APA	Mylar 0.01 $\mu$ F 50V ±10%
C06	C1HYYZ223APA	Ceramic 0.022 $\mu$ F 50V +80, -20%		C81	C1HFYK183APA	Mylar 0.018 $\mu$ F 50V ±10%
C07	C1HCYK101APA	Ceramic 100 pF 50V ±10%		C82	C1ERY-106APA	Electrolytic 10 $\mu$ F 25V
C08	C1HCYK030APA	Ceramic 3 pF 50V ±0.25%		C83,84	C1HFRK563A	Mylar 0.056 $\mu$ F 50V ±10%
C09	C1HCDK240PH	Ceramic 24 pF 50V ±5%		C85,86	C1HCYK471APA	Ceramic 470 pF 50V ±10%
C10	C1HCDD070CH	Ceramic 7 pF 50V ±0.5%		C87,88	C1HCZK271BPA	Ceramic 270 pF 50V ±10%
C11	C1HCDK330CH	Ceramic 33 pF 50V ±10%		C89,90	C1CRY-106LPA	Electrolytic 10 $\mu$ F 16V
C12	C1HCDD100CH	Ceramic 10 pF 50V ±0.5%		C91,92	C1ARY-107APA	Electrolytic 100 $\mu$ F 10V
C13	C1HYYZ223APA	Ceramic 0.022 $\mu$ F 50V +80, -20%		C93,94	C1HFYK123APA	Mylar 0.012 $\mu$ F 50V ±10%
C14,15	C1HYYZ473APA	Ceramic 0.047 $\mu$ F 50V +80, -20%		C95,96	C1HFYK472APA	Mylar 0.0047 $\mu$ F 50V ±10%
16,17,18,19				C97,98	C1HRY-105APA	Electrolytic 1 $\mu$ F 50V
C20	C1HYYZ223APA	Ceramic 0.022 $\mu$ F 50V +80, -20%		C99	4 2232 00430	Ceramic 0.01 $\mu$ F x2 250V
C21,22	C1HRY-105APA	Electrolytic 1 $\mu$ F 50V		C100,101	C1CRY-106APA	Electrolytic 10 $\mu$ F 16V
C23	C1HYYZ223APA	Ceramic 0.022 $\mu$ F 50V +80, -20%		102,103		
C24	C1HYYZ473APA	Ceramic 0.047 $\mu$ F 50V +80, -20%		C104,105	C1HFYK273APA	Mylar 0.027 $\mu$ F 50V ±10%
C25	C1CRY-476APA	Electrolytic 47 $\mu$ F 16V		C106,107	C1HFRJ224ML	Mylar 0.22 $\mu$ F 50V ±5%
C26	C1HYYZ473APA	Ceramic 0.047 $\mu$ F 50V +80, -20%		C108,109	C1HFYK222APA	Mylar 0.0022 $\mu$ F 50V ±10%
C27	C1HCDK331SL	Ceramic 330 pF 50V ±10%		C110,111	C1HFYK333APA	Mylar 0.033 $\mu$ F 50V ±10%
C28	C1HRY-474APA	Electrolytic 0.47 $\mu$ F 50V		C113,114	C1HRY-106APA	Electrolytic 10 $\mu$ F 50V
				C115	C1HYYZ473APA	Ceramic 0.047 $\mu$ F 50V +80, -20%

# PARTS LIST (Continued)

Ref. No.	Parts Number	Description			Ref. No.	Parts Number	Description		
SEMICONDUCTORS					RESISTORS				
D01,02 03,04 05,06,08	205 5 9040 44210	Diode, DS-442			R45,46	R2EDZJ473APA	Carbon	47k	1/4W ±5%
D07	DNN-RD9R1EB	Diode, RD9.1EB			R47,48	R2EDZJ102APA	Carbon	1k	1/4W ±5%
IC01	206 5 0161 23151	IC, LA1231NS			R51,52	R2EDZJ332APA	Carbon	3.3k	1/4W ±5%
IC02	206 5 0743 35012	IC, LA3350B			R53,54	R2EDZJ561APA	Carbon	560	1/4W ±5%
IC03	206 5 0171 24010	IC, LA1240			R55,56	R2EDZJ332APA	Carbon	3.3k	1/4W ±5%
IC04,05	IJJ-NJM4558DX	IC, NJM4558D			R57,58	R2EDZJ102APA	Carbon	1k	1/4W ±5%
Q01	TNN-2SK49-F2	TR 2SK49 F2, H			R59	R2EDZJ101APA	Carbon	100	1/4W ±5%
Q02	TKK-2SC535-B	TR 2SC535 B, C			R60	R2EDZJ155APA	Carbon	1.5M	1/4W ±5%
Q03,04	203 5 5500 93040	TR 2SC930 D, E			R61	R2EDZJ824APA	Carbon	820k	1/4W ±5%
Q06,07	203 5 5251 57160	TR 2SC1571 F, G			R62	R2EDZJ472APA	Carbon	4.7k	1/4W ±5%
Q08	203 5 6510 04160	TR 2SK41 F			R63	R2HXB1J680A	Oxide Metal Film	68 1/2W	±5%
Q09	203 5 5000 53660	TR 2SC536 F, G			R64	R2EDZJ102APA	Carbon	1k	1/4W ±5%
Q11	203 5 5251 57180	TR 2SC1571 H			R65	R2EDZJ331APA	Carbon	330	1/4W ±5%
Q12	203 5 5000 53660	TR 2SC536 F, G			R66	R2EDZJ222APA	Carbon	2.2k	1/4W ±5%
Q13	203 5 7230 60860	TR 2SA608 F, G			R67	R2EDZJ152APA	Carbon	1.5k	1/4W ±5%
Q14	203 5 7252 27460	TR 2SC2274 F			R68	R2EDZJ153APA	Carbon	15k	1/4W ±5%
Q15,16 17,18,19,20,21,22	203 5 5000 53660	TR 2SC536 F, G			R69	R2HXB1J01A	Oxide Metal Film	100 1/2W	±5%
					R70	R2EDZJ222APA	Carbon	2.2k	1/4W ±5%
					R71,72	R2EDZJ103APA	Carbon	10k	1/4W ±5%
					R73	R2EDZJ272APA	Carbon	2.7k	1/4W ±5%
					R74	R2EDZJ154APA	Carbon	150k	1/4W ±5%
					R75	R2EDZJ563APA	Carbon	56k	1/4W ±5%
					R76	R2EDZJ332APA	Carbon	3.3k	1/4W ±5%
R01	R2EDZJ680APA	Carbon	68	1/4W ±5%	R77	R2EDZJ122APA	Carbon	1.2k	1/4W ±5%
R02	R2HXB1J01A	Oxide Metal Film	100 1/2W	±5%	R78	R2EDZJ104APA	Carbon	100k	1/4W ±5%
R03	R2EDZJ472APA	Carbon	4.7k	1/4W ±5%	R79	R2EDZJ102APA	Carbon	1k	1/4W ±5%
R04	R2EDZJ223APA	Carbon	22k	1/4W ±5%	R80	R2HXB1J01A	Oxide Metal Film	100 1/2W	±5%
R05	R2EDZJ102APA	Carbon	1k	1/4W ±5%	R81	R2EDZJ561APA	Carbon	560	1/4W ±5%
R07	R2EDUJ4R7A	Carbon	4.7	1/4W ±5%	R82	R2EDZJ103APA	Carbon	10k	1/4W ±5%
R08	R2EDUJ103A	Carbon	10k	1/4W ±5%	R83	R2EDZJ471APA	Carbon	470	1/4W ±5%
R09	R2EDUJ222A	Carbon	2.2k	1/4W ±5%	R84	R2EDZJ103APA	Carbon	10k	1/4W ±5%
R10	R2EDUJ103A	Carbon	10k	1/4W ±5%	R85	R2EDZJ391APA	Carbon	390	1/4W ±5%
R11	R2EDZJ122APA	Carbon	1.2k	1/4W ±5%	R86	R2EDZJ103APA	Carbon	10k	1/4W ±5%
R12	R2EDZJ100APA	Carbon	10	1/4W ±5%	R87	R2EDZJ331APA	Carbon	330	1/4W ±5%
R13	R2HXB1J01A	Oxide Metal Film	100 1/2W	±5%	R88	R2EDZJ103APA	Carbon	10k	1/4W ±5%
R14	R2EDZJ391APA	Carbon	390	1/4W ±5%	R89	R2EDZJ271APA	Carbon	270	1/4W ±5%
R15	R2EDZJ222APA	Carbon	2.2k	1/4W ±5%	R90	R2EDZJ103APA	Carbon	10k	1/4W ±5%
R16	R2EDZJ471APA	Carbon	470	1/4W ±5%	R91	R2EDZJ474APA	Carbon	470k	1/4W ±5%
R17	R2EDZJ122APA	Carbon	1.2k	1/4W ±5%	R92	R2EDZJ824APA	Carbon	820k	1/4W ±5%
R18	R2EDZJ331APA	Carbon	330	1/4W ±5%	R93	R2EDZJ472APA	Carbon	4.7k	1/4W ±5%
R19	R2EDZJ104APA	Carbon	100k	1/4W ±5%	R94	R2EDZJ474APA	Carbon	470k	1/4W ±5%
R20	R2EDZJ222APA	Carbon	2.2k	1/4W ±5%	R95	R2EDZJ103APA	Carbon	10k	1/4W ±5%
R21	R2EDZJ474APA	Carbon	470k	1/4W ±5%	R96	R2EDZJ331APA	Carbon	330	1/4W ±5%
R22	R2EDZJ223APA	Carbon	22k	1/4W ±5%	R97	R2EDZJ473APA	Carbon	47k	1/4W ±5%
R23	R2EDZJ103APA	Carbon	10k	1/4W ±5%	R98	R2EDZJ154APA	Carbon	150k	1/4W ±5%
R25	R2EDZJ562APA	Carbon	5.6k	1/4W ±5%	R99	R2EDZJ103APA	Carbon	10k	1/4W ±5%
R26	R2EDZJ222APA	Carbon	2.2k	1/4W ±5%	R100	R2EDZJ184APA	Carbon	180k	1/4W ±5%
R27	R2EDZJ822APA	Carbon	8.2k	1/4W ±5%	R101	R2EDZJ474APA	Carbon	470k	1/4W ±5%
R30	R2EDZJ563APA	Carbon	56k	1/4W ±5%	R102	R2EDZJ102APA	Carbon	1k	1/4W ±5%
R31	R2EDZJ103APA	Carbon	10k	1/4W ±5%	R103,104	R2EDZJ103APA	Carbon	10k	1/4W ±5%
R32	R2EDZJ473APA	Carbon	47k	1/4W ±5%	107				
R33	R2EDZJ222APA	Carbon	2.2k	1/4W ±5%	R108,109	R2EDZJ822APA	Carbon	8.2k	1/4W ±5%
R34	R2HXB1J220A	Oxide Metal Film	22 1/2W	±5%	R110,111	R2EDZJ392APA	Carbon	3.9k	1/4W ±5%
R37	R2EDZJ332APA	Carbon	3.3k	1/4W ±5%	R112,113	R2EDZJ271APA	Carbon	270	1/4W ±5%
R38	R2EDZJ822APA	Carbon	8.2k	1/4W ±5%	R114,115	R2EDZJ473APA	Carbon	47k	1/4W ±5%
R39	R2EDZJ222APA	Carbon	2.2k	1/4W ±5%	R116,117	R2EDZJ331APA	Carbon	330	1/4W ±5%
R40	R2HXB1J680A	Oxide Metal Film	68 1/2W	±5%	R118,119	R2EDZJ224APA	Carbon	220k	1/4W ±5%
R41,42	R2EDZJ562APA	Carbon	5.6k	1/4W ±5%	R120,121	R2EDZJ153APA	Carbon	15k	1/4W ±5%
R43,44	R2EDZJ274APA	Carbon	270k	1/4W ±5%					

# PARTS LIST (Continued)

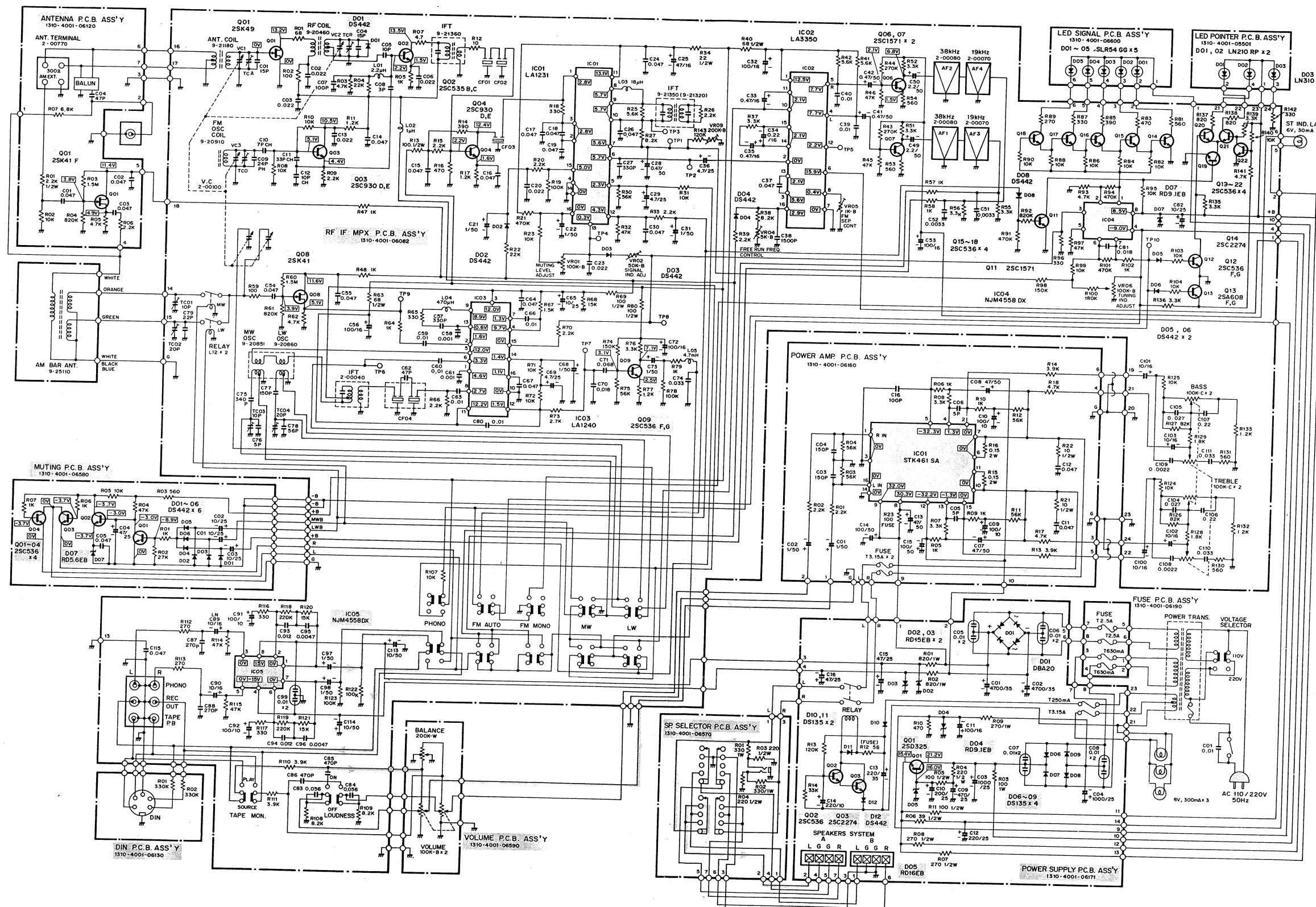
Ref. No.	Parts Number	Description					Ref. No.	Parts Number	Description							
<b>RESISTORS</b>					<b>CAPACITORS</b>											
R122,123	R2EDUJ104A	Carbon	100k	1/4W	±5%	C01,02	C1HYYZ473APA	Ceramic	0.047 μF	50V	+80, -20%					
R124,125	R2EDZJ103APA	Carbon	10k	1/4W	±5%	03										
R126,127	R2EDZJ823APA	Carbon	82k	1/4W	±5%	C04	C1HCYK470APA	Ceramic	47 pF	50V	±10%					
R128,129	R2EDZJ182APA	Carbon	1.8k	1/4W	±5%											
R130,131	R2EDZJ561APA	Carbon	560	1/4W	±5%											
R132,133	R2EDZJ122APA	Carbon	1.2k	1/4W	±5%	Q01	203 5 6510 04160	TR	2SK41F							
R135,136	R2EDZJ332APA	Carbon	3.3k	1/4W	±5%											
R137,138	R2EDZJ821APA	Carbon	820	1/4W	±5%											
R139	R2EDZJ332APA	Carbon	3.3k	1/4W	±5%											
R140	R2EDZJ103APA	Carbon	10k	1/4W	±5%	R01	R2HCPK222A	Solid	2.2k	1/2W	±10%					
R141	R2EDZJ472APA	Carbon	4.7k	1/4W	±5%	R02	R2EDZJ103APA	Carbon	10k	1/4W	±5%					
R142	R2EDZJ331APA	Carbon	330	1/4W	±5%	R03	R2EDZJ155APA	Carbon	1.5M	1/4W	±5%					
R143	R2EDUJ124A	Carbon	120k	1/4W	±5%	R04	R2EDZJ824APA	Carbon	820k	1/4W	±5%					
						R05	R2EDZJ472APA	Carbon	4.7k	1/4W	±5%					
						R06	R2EDUJ222A	Carbon	2.2k	1/4W	±5%					
						R07	R2EDUJ682A	Carbon	6.8k	1/4W	±5%					
<b>VOLUME P.C.B. Assy</b>					<b>DIN P.C.B. Assy</b>											
131 0 4001 06590					131 0 4001 06130											
Ref. No.	Parts Number	Description					Ref. No.	Parts Number	Description							
		4 2222 02050 VR 200k-Wx1, 100k-Bx2							4 2352 00370 DIN 5P							
<b>MUTING P.C.B. Assy</b>					<b>RESISTORS</b>											
131 0 4001 06580					R01,02 R2EDZJ334APA					Carbon 330k 1/4W ±5%						
Ref. No.	Parts Number	Description					<b>CAPACITORS</b>									
		4 2352 00810 Socket 9P					<b>L.E.D. SIGNAL P.C.B. Assy</b>									
<b>CAPACITORS</b>					131 0 4001 06600											
C01,02	C1ERY-106APA	Electrolytic	10 μF	25V			<b>SEMICONDUCTORS</b>									
03							D01,02 DYY-SLR-54GG									
C04	C1ERY-476APA	Electrolytic	47 μF	25V			Diode, SLR-54GG									
C05	C1HYYZ473APA	Ceramic	0.047 μF	50V	+80, -20%		03,04,05									
<b>SEMICONDUCTORS</b>					<b>L.E.D. SIGNAL P.C.B. Assy</b>											
D01,02	205 5 9040 44210	Diode, DS-442					131 0 4001 05501									
03,04							<b>SEMICONDUCTORS</b>									
05,06							D01,02 DWW-LN210RP									
D07	DNN-RD5R6EB	Diode, RD5.6EB					Diode, LN210RP									
Q01,02	203 5 5000 53660	TR 2SC536F, G					D03 DWW-LN310GP									
03,04							<b>POWER AMP P.C.B. Assy</b>									
<b>RESISTORS</b>					131 0 4001 06160											
R01	R2EDZJ102APA	Carbon	1k	1/4W	±5%		<b>SEMICONDUCTORS</b>									
R02	R2EDZJ273APA	Carbon	27k	1/4W	±5%		C01,02 C1HRY-105APA									
R03	R2EDZJ561APA	Carbon	560	1/4W	±5%		C03,04 C1HCZK151BPA									
R04	R2EDZJ473APA	Carbon	47k	1/4W	±5%		Electrolytic 1 μF 50V									
R05	R2EDZJ103APA	Carbon	10k	1/4W	±5%		Ceramic 150 pF 50V ±10%									
R06,07	R2EDZJ102APA	Carbon	1k	1/4W	±5%											
<b>ANTENNA P.C.B. Assy</b>					<b>CAPACITORS</b>											
131 0 4001 06120					C01,02 C1HRY-105APA											
<b>Ref. No. Parts Number Description</b>					C03,04 C1HCZK151BPA											
		4 2372 00770 SP Terminal 4P					Balun									

## PARTS LIST (Continued)

Ref. No.	Parts Number	Description	Ref. No.	Parts Number	Description			
<b>CAPACITORS</b>								
C05,06	C1HCDC050SL	Ceramic 5 pF 50V ±0.25%	R01,02	R3AXBJ821A	Oxide Metal Film 820 1W ±5%			
C07,08	C1HRY-476APA	Electrolytic 47 μF 50V	R03	R3AXBJ101A	Oxide Metal Film 100 1W ±5%			
C09,10	C1ARY-107APA	Electrolytic 100 μF 10V	R04	R2HXB221A	Oxide Metal Film 220 1/2W ±5%			
C11,12	C1HFYK473APA	Mylar 0.047 μF 50V ±10%	R05	R2HXB101A	Oxide Metal Film 100 1/2W ±5%			
C13	C1HRY-476APA	Electrolytic 47 μF 50V	R06	R2HZPK390A	Fuse 39 1/2W ±10%			
C14,15	C1HRE-107A	Electrolytic 100 μF 50V	R07,08	R2HXB271A	Oxide Metal Film 270 1/2W ±5%			
C16	C1HCDK101SL	Ceramic 100 pF 50V ±10%	09					
<b>SEMICONDUCTORS</b>								
IC01	206 5 7330 46141	IC, STK-461SA	R10	R2EDZJ471APA	Carbon 470 1/4W ±5%			
<b>RESISTORS</b>								
R01,02	R2EDZJ222APA	Carbon 2.2k 1/4W ±5%	R11	R2HXB101A	Oxide Metal Film 100 1/2W ±5%			
R03,04	R2EDZJ563APA	Carbon 56k 1/4W ±5%	R12	R2HZPK560A	Fuse 56 1/2W ±10%			
R05,06	R2EDZJ102APA	Carbon 1k 1/4W ±5%	R13	R2EDZJ124APA	Carbon 120k 1/4W ±5%			
R07,08	R2EDZJ332APA	Carbon 3.3k 1/4W ±5%	R14	R2EDZJ333APA	Carbon 33k 1/4W ±5%			
R09,10	R2EDZJ102APA	Carbon 1k 1/4W ±5%	<b>SPEAKER SELECTOR P.C.B. Assy</b>					
R11,12	R2EDZJ563APA	Carbon 56k 1/4W ±5%	<b>131 0 4001 06570</b>					
R13,14	R2EDZJ392APA	Carbon 3.9k 1/4W ±5%	<b>Ref. No. Parts Number Description</b>					
R15,16	4 2212 00140	Metallized Paper 0.15 2W	4 2312 05020	Switch Rotary				
R17,18	R2EDZJ472APA	Carbon 4.7k 1/4W ±5%	4 2352 00190	Microphone Jack 3P				
R21,22	R2HXB100A	Oxide Metal Film 10 1/2W ±5%	<b>RESISTORS</b>					
R23	R2HZK101A	Fuse 100 1/2W ±10%	R01,02	R3AXBJ331A	Oxide Metal Film 330 1W ±5%			
<b>POWER SUPPLY P.C.B. Assy</b>								
<b>131 0 4001 06171</b>								
<b>Ref. No. Parts Number Description</b>								
	4 2322 00160	Relay	<b>FUSE P.C.B. Assy</b>					
	4 2349 20580	Fuse 3.15 A	<b>131 0 4001 06190</b>					
	4 2349 21320	Fuse 250 mA	<b>Ref. No. Parts Number Description</b>					
	4 2372 00950	Terminal 4P	4 2349 20400	Fuse 630 mA				
<b>CAPACITORS</b>								
C01,02	4 2232 00480	Electrolytic 4700 μF 35V	4 2349 20570	Fuse 2.5 AT				
C03,04	C1ERE-108A	Electrolytic 1000 μF 25V	<b>CAPACITORS</b>					
C05,06	4 2232 00430	Ceramic 0.01 μF x 2 250V	C01,02	4 2232 00480	Electrolytic 4700 μF 35V			
07,08			C03,04	C1ERE-108A	Electrolytic 1000 μF 25V			
C09	C1ERE-477A	Electrolytic 470 μF 25V	C05,06	4 2232 00430	Ceramic 0.01 μF x 2 250V			
C10	C1ERE-227A	Electrolytic 200 μF 25V	C07,08					
C11	C1CRY-107APA	Electrolytic 100 μF 16V	C09	C1ERE-477A	Electrolytic 470 μF 25V			
C12	C1ERE-227A	Electrolytic 220 μF 25V	C10	C1ERE-227A	Electrolytic 200 μF 25V			
C13	C1VRE-227A	Electrolytic 220 μF 35V	C11	C1CRY-107APA	Electrolytic 100 μF 16V			
C14	C1ARY-227APA	Electrolytic 220 μF 10V	C12	C1ERE-227A	Electrolytic 220 μF 25V			
<b>SEMICONDUCTORS</b>								
D01	202 5 2570 02015	Diode, DBA 20C-K15	D01	202 5 2570 02015	Diode, DBA 20C-K15			
D02,03	DNN-RD15EB3	Diode, RD15EB3	D02,03	DNN-RD15EB3	Diode, RD15EB3			
D04	DNN-RD9R1EB	Diode, RD9.1EB	D04	DNN-RD9R1EB	Diode, RD9.1EB			
D05	DNN-RD16EB	Diode, RD16EB	D05	DNN-RD16EB	Diode, RD16EB			
D06,07	202 5 2470 13540	Diode, DS135D	D06,07	202 5 2470 13540	Diode, DS135D			
08,09			08,09					
10,11			10,11					
D12	205 5 9040 44210	Diode, DS-442	D12	205 5 9040 44210	Diode, DS-442			
Q01	203 5 8620 32550	TR 2SD325 E, F	Q01	203 5 8620 32550	TR 2SD325 E, F			
Q02	203 5 5000 53660	TR 2SC536 F, G	Q02	203 5 5000 53660	TR 2SC536 F, G			
Q03	203 5 7252 27450	TR 2SC2274 E, F	Q03	203 5 7252 27450	TR 2SC2274 E, F			



# SCHEMATIC DIAGRAM

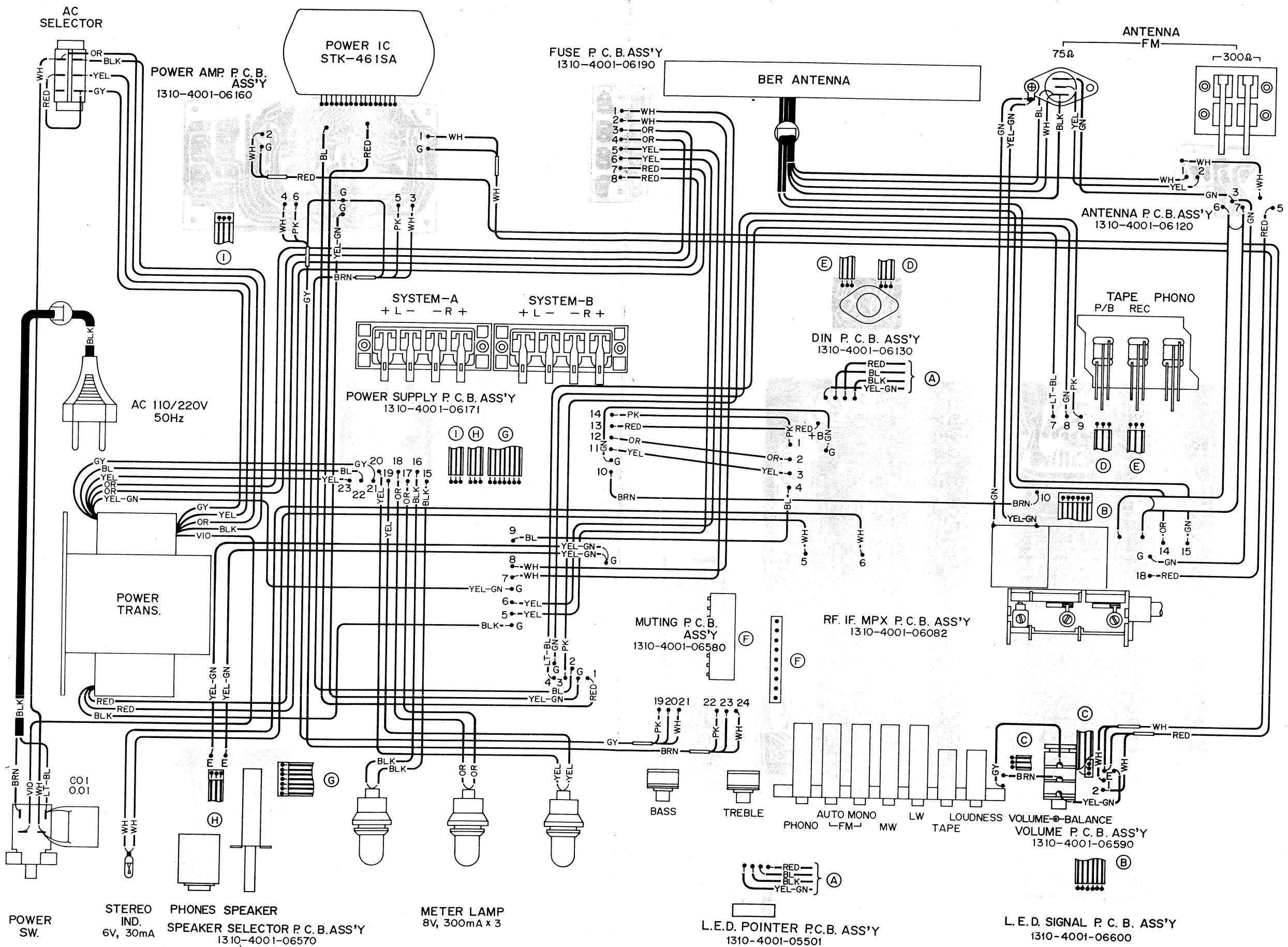


## NOTES:

1. All resistors values are indicated in "ohm" (K=10<sup>3</sup>, M=10<sup>6</sup>).
2. All capacitors values are indicated in "μF" (P=10<sup>-12</sup>).
3. All voltages indicated on the schematics are measured under the following conditions.
  - a. Use a V.T.V.M.
4. This is a basic schematic diagram.

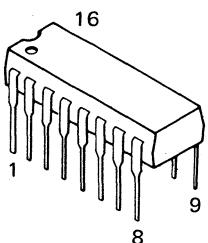
Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

# POINT TO POINT WIRING DIAGRAM

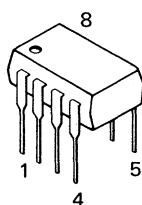


# SEMICONDUCTOR LEAD IDENTIFICATION

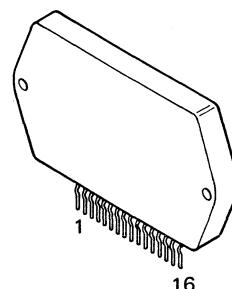
## INTEGRATED CIRCUITS



- LA1231
- LA3350
- LA1240

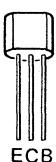


- NJM4558



- STK-461

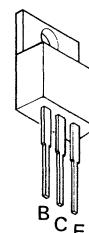
## TRANSISTORS



- 2SA608
- 2SC535
- 2SC536
- 2SC930
- 2SC1571
- 2SC2274

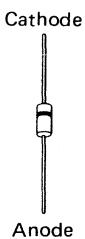


- 2SK41
- 2SK49

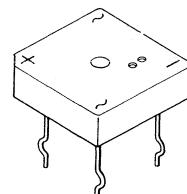


- 2SD325

## DIODES



- DS135
- DS442
- RD5.6E
- RD9.1E
- RD15E
- RD16E



- DBA-20C